

APPALACHIAN FOREST EXPERIMENT STATION

Growth of Appalachian Hardwood Forests

(In the practice of conservation measures under the Lumber Code and in other forest work, the question of how fast timber of different types and conditions will grow is of considerable importance. Authentic information on growth rate is still fragmentary, applying to only a few of the many forest types and conditions in the Southern Appalachians. Accordingly the Appalachian Forest Experiment Station will from time to time issue brief summaries of growth data obtained in the course of its work on different forest tracts. The following is the first of the series.)

Description: Virgin timber on a moist, north facing bench at an elevation of 3100 feet on the Blue Ridge, Towns County, Georgia. The general conditions of the timber and environmental factors indicate the locality to be a good site 2. The area studied occupies about 1,000 acres in which there has been only a very light past cutting which removed a few choice trees for veneer. Until about 1919 there was no organized effort to control fires in the area so that past burning and the decay following the formation of basal wounds have resulted in an estimated cull of 20 per cent of the merchantable stand.

Date of Examination: May, 1931

Stand per acre and growth

From the following table the net merchantable volume, allowing for cull, equals 9,600 - 1920 or 7680 board feet in living merchantable trees. In addition the stand contained 3 cull trees per acre and 23 dead chestnuts above 12 inches d.b.h. There were also 25 trees per acre of commercial species in the 5 - 12 inch classes.

Species	:No. trees: : over 12": : d.b.h.	: Range of : : diameters: : 1931	: Gross vol. : : 1/ : Gross : vol.2/ : 1911	: Difference : in volumes : of living : trees in 20 : yr. period.
Northern Red Oak: (Spotted Oak)	: 11	: 13-34	: 3840	: 2020 : 1820 ^{3/}
Yellow poplar	: 3	: 14-43	: 2930	: 2400 : 530
Hickory	: 4	: 13-24	: 1080	: 960 : 120
White Oak	: 2	: 18-26	: 570	: 430 : 145
Chestnut Oak	: 3	: 13-24	: 490	: 260 : 230
Scarlet oak (Spanish oak)	: 2	: 15-20	: 380	: 240 : 140
Black oak	: 2	: 15-16	: 250	: 140 : 110
White ash	: 1	: 13	: 60	: 0 : 60
Totals	28		9,600	6450 3150

1/ Scribner Dec. C log rule

2/ Figures corrected for mortality of 1.0 per cent annually based on past volume when this volume is computed from present number of living trees. The correction factor of 1 per cent was obtained by mortality records kept for a period of years on 3 small virgin tracts.

3/ The proportionally great increase in volume of northern red oak was due to a large proportion of 11 and 12 inch trees which became 13 inches or larger during the 20-year period. In 1911 those trees were not included in volume figure since they were below the 13 inch limit.

By means of increment borings the diameters of the various species 20 years prior to the time of study were determined and the stand per acre at that time computed. A comparison of the gross volumes in 1931 and those of 20 years before is given in the table. From these figures it appears that 20 years of growth produced 3150 board feet less an estimated cull factor of 20 per cent. The average annual growth in board feet then is $\frac{3150 - 360}{20 \text{ yrs.}}$ (cull) = 126 board feet per acre.